



National Transportation Safety Board Aviation Accident Final Report

Location:	BISMARCK, ND	Accident Number:	CHI98LA266
Date & Time:	07/20/1998, 1642 CDT	Registration:	N9142C
Aircraft:	Cessna R182	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None
Flight Conducted Under:	Part 91: General Aviation - Instructional		

Analysis

A fractured electric fuel pump to carburetor T-connector, Part Number AN917-20, fitting was found during inspection of the engine compartment by a Federal Aviation Administration Inspector. Metallurgical analysis of the separated fitting by the National Transportation Safety Board's Material Laboratory revealed clamshell shaped crack arrest marks and step-like features to be present. Closer examination of the step-like features revealed a large number of markings similar to river patterns, which converged at numerous locations on the outside diameter (at the root of the thread) of the fitting. No mechanical damage was noted at any of the crack origin locations. The last airplane inspection was a 100-hour inspection performed in March of 1998.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The fatigue failure of the fuel system line fitting.

Findings

Occurrence #1: FIRE

Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. (C) FUEL SYSTEM,LINE FITTING - FATIGUE

Occurrence #2: FIRE/EXPLOSION

Phase of Operation: MANEUVERING - TURN TO LANDING AREA (EMERGENCY)

Findings

2. (C) FUEL SYSTEM,LINE FITTING - FATIGUE

Factual Information

On July 20, 1998, at 1642 central daylight time, a Cessna R182, N9142C, operated by an airline transport pilot, received substantial damage following an in-flight fire while maneuvering in the traffic pattern at Bismarck Municipal Airport, near Bismarck, North Dakota. Visual meteorological conditions prevailed at the time of the accident. The 14 CFR Part 91 instructional flight was not operating on a flight plan. The pilot and student reported no injuries. The local flight originated Bismarck Municipal Airport at 1415.

In a written statement, the instructor reported that they had returned to the to the traffic pattern to perform takeoff and landings after conducting various air work maneuvers for approximately 1-1/2 hours. During their fourth takeoff in the traffic pattern, the instructor noticed abnormal engine performance brought on by no fuel pressure at an altitude of approximately 500' above ground level. The auxiliary boost pump was actuated but it did not rectify and was subsequently turned off. The instructor requested an immediate landing from the tower, lowered the landing gear and throttled back the engine. The instructor stated that when the engine was throttled back, the engine backfired and caused an explosion in the engine compartment. The instructor proceeded to shut down aircraft systems and reported that fire was visible on the right side of the airplane. The airplane was then "dead stuck" to a landing on a taxiway where fire personnel extinguished the fire.

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Pilot Information

Certificate:	Airline Transport; Flight Instructor; Commercial	Age:	51, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	02/25/1998
Occupational Pilot:	Last Flight Review or Equivalent:		
Flight Time:	10300 hours (Total, all aircraft), 1000 hours (Total, this make and model), 10250 hours (Pilot In Command, all aircraft), 90 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N9142C
Model/Series:	R182 R182	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	00417
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	100 Hour	Certified Max Gross Wt.:	3100 lbs
Time Since Last Inspection:	82 Hours	Engines:	1 Reciprocating
Airframe Total Time:	2134 Hours	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	O-540-J3C5D
Registered Owner:	JAMESTOWN AVIATION INC	Rated Power:	235 hp
Operator:	JAMESTOWN AVIATION INC	Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	CTHA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	BIS, 1677 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1655 CDT	Direction from Accident Site:	0°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	17 knots / 29 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	330°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	31° C / 9° C
Precipitation and Obscuration:			
Departure Point:	(BIS)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	1512 CDT	Type of Airspace:	Class E

Airport Information

Airport:	BISMARCK MUNICIPAL (BIS)	Runway Surface Type:	Asphalt
Airport Elevation:	1677 ft	Runway Surface Condition:	Dry
Runway Used:	31	IFR Approach:	None
Runway Length/Width:	8974 ft / 150 ft	VFR Approach/Landing:	Forced Landing; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	In-Flight
Ground Injuries:	N/A	Aircraft Explosion:	In-Flight
Total Injuries:	2 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	MITCHELL F GALLO	Report Date:	02/15/2001
Additional Participating Persons:	JOHN KLEIN; FARGO, ND		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinquiry@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).